

**ELEKTROMAGNETILINE ÜHILDUVUS. OSA 3-3:
PIIRVÄÄRTUSED. PINGEMUUTUSTE, PINGEKÕIKUMISTE
JA VÄRELUSE PIIRAMINE MITTETINGLIKE
ÜHENDUSTEGA SEADMETELE AVALIKES
MADALPINGELISTES TOITESÜSTEEMIDES
TUNNUSVOOLUGA KUNI 16 A FAASI KOHTA**

**Electromagnetic compatibility (EMC) - Part 3-3: Limits -
Limitation of voltage changes, voltage fluctuations and
flicker in public low-voltage supply systems, for
equipment with rated current ≤ 16 A per phase and not
subject to conditional connection (IEC 61000-3-3:2013 +
IEC 61000-3-3:2013/A1:2017 +
IEC 61000-3-3:2013/A2:2021)**

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

See Eesti standard EVS-EN 61000-3-3:2013+A1+A2:2021 sisaldab Euroopa standardi EN 61000-3-3:2013 ja selle muudatuste A1:2019 ja A2:2021, ja paranduse AC:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 61000-3-3:2013+A1+A2:2021 consists of the English text of the European standard EN 61000-3-3:2013 and its amendments A1:2019 and A2:2021 and its corrigendum AC:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 23.08.2013, muudatused A1 02.08.2019 ja A2 05.11.2021.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 23.08.2013, for A1 02.09.2019 and A2 05.11.2021.
Muudatusega A1 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud püstkriipsuga teksti vasakul veerisel Muudatusega A2 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega $\boxed{A_2}$ $\langle A_2 \rangle$. Parandusega AC lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega \boxed{AC} $\langle AC \rangle$.	The start and finish of text introduced or altered by amendment A1 is indicated in the text by a vertical line in the left margin of the text. The start and finish of text introduced or altered by amendment A2 is indicated in the text by tags $\boxed{A_2}$ $\langle A_2 \rangle$. The start and finish of text introduced or altered by corrigendum AC is indicated in the text by tags \boxed{AC} $\langle AC \rangle$.
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English Version

**Electromagnetic compatibility (EMC) - Part 3-3: Limits -
Limitation of voltage changes, voltage fluctuations and flicker in
public low-voltage supply systems, for equipment with rated
current ≤ 16 A per phase and not subject to conditional
connection
(IEC 61000-3-3:2013 + IEC 61000-3-3:2013/A1:2017 + IEC
61000-3-3:2013/A2:2021)**

Compatibilité électromagnétique (CEM) - Partie 3-3: Limites
- Limitation des variations de tension, des fluctuations de
tension et du papillotement dans les réseaux publics
d'alimentation basse tension, pour les matériels ayant un
courant assigné ≤ 16 A par phase et non soumis à un
raccordement conditionnel
(CEI 61000-3-3:2013 + IEC 61000-3-3:2013/A1:2017 + IEC
61000-3-3:2013/A2:2021)

Elektromagnetische Verträglichkeit (EMV) - Teil 3-3:
Grenzwerte - Begrenzung von Spannungsänderungen,
Spannungsschwankungen und Flicker in öffentlichen
Niederspannungs-Versorgungsnetzen für Geräte mit einem
Bemessungsstrom ≤ 16 A je Leiter, die keiner
Sonderanschlussbedingung unterliegen
(IEC 61000-3-3:2013 + IEC 61000-3-3:2013/A1:2017 + IEC
61000-3-3:2013/A2:2021)

This European Standard was approved by CENELEC on 2013-06-18. Amendment A1 was approved by CENELEC on 2017-06-22. Amendment A2 was approved by CENELEC on 2021-04-29. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard and its amendments the status of a national standard without any alteration.

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Foreword

The text of document 77A/809/FDIS, future edition 3 of IEC 61000-3-3, prepared by SC 77A, "EMC - Low frequency phenomena", of IEC TC 77, "Electromagnetic compatibility" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61000-3-3:2013.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2014-03-18
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-06-18

This document supersedes EN 61000-3-3:2008.

EN 61000-3-3:2013 includes the following significant technical changes with respect to EN 61000-3-3:2008:

This edition takes account of the changes made in EN 61000-4-15:2011.

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The text of the International Standard IEC 61000-3-3:2013 was approved by CENELEC as a European Standard without any modification.

IEC 61000-3-3:2013/A1 European foreword

The text of document 77A/952/FDIS, future IEC 61000-3-3:2013/A1, prepared by SC 77A, "EMC — Low-frequency phenomena", of IEC TC 77, "Electromagnetic compatibility" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61000-3-3:2013/A1:2019.

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The text of the International Standard IEC 61000-3-3:2013/A1:2017 was approved by CENELEC as a European Standard without any modification.

A₂ Amendment A2 European foreword

The text of document 77A/1075/CDV, future IEC 61000-3-3/A2, prepared by SC 77A "EMC - Low frequency phenomena" of IEC/TC 77 "Electromagnetic compatibility" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61000-3-3:2013/A2:2021.

The following dates are fixed:

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The text of the International Standard IEC 61000-3-3:2013/A2:2021 was approved by CENELEC as a European Standard without any modification. **A₂**

INTERNATIONAL STANDARD



**Electromagnetic compatibility (EMC) –
Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker
in public low-voltage supply systems, for equipment with rated current ≤ 16 A
per phase and not subject to conditional connection**



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IEC 61000-3-3

Edition 3.2 2021-03
CONSOLIDATED VERSION

INTERNATIONAL STANDARD



**Electromagnetic compatibility (EMC) –
Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker
in public low-voltage supply systems, for equipment with rated current ≤ 16 A
per phase and not subject to conditional connection**

INTERNATIONAL
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) –**Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection**

FOREWORD

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International Standard IEC 61000-3-3 has been prepared by subcommittee 77A: EMC – Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

This standard forms part 3-3 of IEC 61000 series of standards. It has the status of a product family standard.

This third edition cancels and replaces the second edition published in 2008. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) This edition takes account of the changes made in IEC 61000-4-15:2010.

The text of this standard is based on the following documents:

FDIS	Report on voting
77A/809/FDIS	77A/816/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61000 series, published under the general title *Electromagnetic compatibility (EMC)*, can be found on the IEC website.

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AMENDMENT A1 FOREWORD

This amendment has been prepared by subcommittee 77A: EMC – Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

The text of this amendment is based on the following documents:

FDIS	Report on voting
77A/952/FDIS	77A/960/RVD

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A2 AMENDMENT A2 FOREWORD

Amendment 2 to IEC 61000-3-3:2013 has been prepared by subcommittee 77A: EMC – Low frequency phenomena, of IEC technical committee 77:Electromagnetic compatibility.

The text of this Amendment is based on the following documents:

CDV	Report on voting
77A/1075/CDV	77A/1093/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Amendment is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications/.

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INTRODUCTION

IEC 61000 is published in separate parts according to the following structure:

Part 1: General

General considerations (introduction, fundamental principles)

Definitions, terminology

Part 2: Environment

Description of the environment

Classification of the environment

Compatibility levels

Part 3: Limits

Emission limits

Immunity limits (in so far as they do not fall under the responsibility of product committees)

Part 4: Testing and measurement techniques

Measurement techniques

Testing techniques

Part 5: Installation and mitigation guidelines

Installation guidelines

Mitigation methods and devices

Part 9: Miscellaneous

Each part is further subdivided into sections which are to be published either as International Standards or as Technical Reports.

These standards and reports will be published in chronological order and numbered accordingly.

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection

1 Scope

This part of IEC 61000 is concerned with the limitation of voltage fluctuations and flicker impressed on the public low-voltage system.

It specifies limits of voltage changes which may be produced by an equipment tested under specified conditions and gives guidance on methods of assessment.

This part of IEC 61000 is applicable to electrical and electronic equipment having an input current equal to or less than 16 A per phase, intended to be connected to public low-voltage distribution systems of between 220 V and 250 V line to neutral at 50 Hz, and not subject to conditional connection.

Equipment which does not comply with the limits of this part of IEC 61000 when tested with the reference impedance Z_{ref} of 6.4, and which therefore cannot be declared compliant with this part, may be retested or evaluated to show conformity with IEC 61000-3-11. Part 3-11 is applicable to equipment with rated input current ≤ 75 A per phase and subject to conditional connection.

The tests according to this part are type tests. Particular test conditions are given in Annex A and the test circuit is shown in Figure 1.

NOTE 1 The limits in this standard relate to the voltage changes experienced by consumers connected at the interface between the public supply low-voltage network and the equipment user's installation. Consequently, if the actual impedance of the supply at the supply terminals of equipment connected within the equipment user's installation exceeds the test impedance, it is possible that supply disturbance exceeding the limits could occur.

NOTE 2 The limits in this standard are based mainly on the subjective severity of flicker imposed on the light from 230 V 60 W coiled-coil filament lamps by fluctuations of the supply voltage. For systems with nominal voltage less than 220 V line to neutral and/or frequency of 60 Hz, the limits and reference circuit values are under consideration.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC/TR 60725, *Consideration of reference impedances and public supply impedances for use in determining disturbance characteristics of electrical equipment having a rated current ≤ 75 A per phase*

IEC 60974-1, *Arc welding equipment – Part 1: Welding power sources*

IEC 61000-3-2, *Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*

IEC 61000-3-11, *Electromagnetic compatibility (EMC) – Part 3-11: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems – Equipment with rated current ≤ 75 A and subject to conditional connection*

IEC 61000-4-15:2010, *Electromagnetic compatibility (EMC) – Part 4-15: Testing and measurement techniques – Flickermeter – Functional and design specifications*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 flicker

impression of unsteadiness of visual sensation induced by a light stimulus whose luminance or spectral distribution fluctuates with time

[SOURCE: IEC 60050-161:1990, 161-08-13]

3.2 voltage change characteristic

$d(t)$

time function of the relative r.m.s. voltage change evaluated as a single value for each successive half period between zero-crossings of the source voltage, except during time intervals in which the voltage is in a steady-state condition for at least 1 s

Note 1 to entry: For detailed information about the evaluation of a voltage change characteristic and the definition of a steady state condition see Annex C and IEC 61000-4-15:2010.

3.3 d_c

maximum steady state voltage change during an observation period

Note 1 to entry: For detailed information about the calculation of d_c see Annex C and IEC 61000-4-15:2010.

3.4 d_{\max}

maximum absolute voltage change during an observation period

Note 1 to entry: For detailed information about the calculation of d_{\max} see Annex C and IEC 61000-4-15:2010.

3.5 T_{\max}

maximum time duration during the observation period that the voltage deviation $d(t)$ exceeds the limit for d_c

Note 1 to entry: During a voltage change characteristic the time duration T_{\max} is accumulated until a new steady state condition is established.

Note 2 to entry: The T_{\max} limit evaluation in this standard is generally intended to evaluate the inrush current pattern of the equipment under test. Thus, as soon as a new steady state condition is established, the T_{\max} evaluation is ended. When a new voltage change occurs that exceeds the limit for d_c , a new T_{\max} evaluation is started. The maximum duration that $d(t)$ exceeds the limit for d_c for any of the individual T_{\max} evaluations during the observation period, is used for the comparison against the T_{\max} limit, and is reported for the test.